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RESEARCH ARTICLE

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Preschool developmental concerns and adjustment in the early school years: Evidence from a Scottish birth cohort

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Abstract

Background: Preschool language and behavioural difficulties impact on multiple domains of the child's early life and can endure into adulthood, predicting poor educational, social, and health outcomes. Highlighting risk factors associated with poor outcomes following language and behavioural difficulties raised in early childhood may facilitate early identification and intervention.

Methods: Data from the Growing Up in Scotland national birth cohort study were used. Language and behavioural difficulties were assessed at age 4 years using parent-reported language concerns and the Strengths and Difficulties Questionnaire. Measures of adjustment were collated into four key outcome domains: attitude to school life, language and general development, behaviour, and general health at age 6 years. Both univariate and multivariate logistic regression models were fitted in order to explore independent associations between language and behavioural difficulties at age 4 years and adjustment to life circumstances at age 6 years, whilst controlling for other risk factors.

Results: Language difficulties at age 4 years increased the odds of the child experiencing difficulty with language and general development, poorer health outcomes, and behavioural difficulties at age 6 years. Behavioural difficulties alone at age 4 years were associated with increased odds of the child experiencing all of the aforementioned outcomes and difficulties in early school life. Lone parent family, low income, and male gender were identified as risk factors for poorer outcomes in the domains measured. At age 4 years, there was no additive effect found with the presence of behaviour difficulties on the relationship between language difficulties and language and developmental outcomes at 6 years.

Conclusions: This paper demonstrates language and behavioural difficulties are associated with poor social, educational, health, and behavioural outcomes. Taking seriously parent-reported concerns and identifying risk factors could limit negative outcomes for the child, their family, and society.

Lucy Thompson, Louise Marryat, James Law, and Philip Wilson contributed equally to this work.

KEYWORDS

behaviour, child development, language delay

1 | INTRODUCTION

The transition from preschool to primary education is rich in opportunities for the developing child; however, depending on developmental progression and resilience factors, it can also be fraught with challenges (Commodari, 2013; Vernon-Feagans, Willoughby, & Garrett-Peters, 2016). Increasingly, we are becoming aware of the potential risk and protective factors experienced in early life, which determine the strength of a child's internal foundations on which they build their experiences of and interactions with the outside world (Shonkoff, Richter, van der Gaag, & Bhutta, 2012). Protective factors such as relationship happiness, community engagement, daily parent–child interaction (McDonald, Kehler, Bayrampour, Fraser-Lee, & Tough, 2016), and better health (Holliday, Cimetta, Cutshaw, Yaden, & Marx, 2014) and risk factors such as child exposure to problematic housing and disadvantaged neighbourhoods (Coulton, Richter, Kim, Fischer, & Cho, 2016), child's suboptimal health, male gender, and coming from a family with low income (Janus & Duku, 2007) have all been shown to contribute to the preschool child's readiness for transition into formal education.

Despite the lack of formal recommendations on developmental screening, the evidence base surrounding the developmental, socio-emotional, and behavioural screening of preschoolers has grown in recent years and suggests that parent-report population-based screening of preschool-aged children identifies between 3% and 18% (Barbarin, 2007; Sim et al., 2013) of children in need of support who may not otherwise be identified until school entry or beyond. Recent population-based studies using the Strengths and Difficulties Questionnaire (SDQ) estimate the prevalence of preschool emotional and behavioural difficulties as measured by an abnormal total difficulties score at around 5–8% (Elberling, Linneberg, Olsen, Goodman, & Skovgaard, 2010; Fuchs, Klein, Otto, & von Klitzing, 2013; Sveen, Berg-Nielsen, Lydersen, & Wichstrøm, 2013; Wlodarczyk et al., 2016). The Growing Up in Scotland (GUS) study found that at school entry, boys were more likely to have problems with hyperactivity/inattention (as rated by parents on the SDQ) than girls, and 22% of boys had an abnormal or borderline score, compared with 15% of girls (Barry et al., 2015; Bradshaw, 2010).

Neurodevelopmental screening at preschool age is, however, a complex process and subject to frequent errors. Factors such as definition of delay/disorder being measured, age of child at assessment, the reliability, and sensitivity of the assessment tool will affect the rate of positive screen results (Campbell, 1995; Keenan, Shaw, Walsh, Delliquadri, & Giovannelli, 1997). The SDQ used in the current study has been found to have satisfactory reliability, in both childhood and preschool samples, with scores above the 90th centile predicting a substantially raised probability of independently diagnosed psychiatric disorders in children (Croft, 2015; Goodman, 2001). It is not, however, a diagnostic tool. There is yet to be a consensus reached as to whether a categorical or dimensional approach is more appropriate for screening within this age group, and recent research, based solely on language development, has advocated a move from traditional screening models to a combined model assessing both risk and performance on screening tools (Law, Rush, Anandan, Cox, & Wood, 2012). One framework for conceptualising preschool child and family risk, groups factors in terms of their "proximity" to the child (Bronfenbrenner, 1979). This model proposes five systems that exert interconnected influences upon the developing child: the microsystem (immediate environment), the mesosystem (connections between immediate environments), the exosystem (Indirect environment), the macrosystem (social and cultural values), and finally the chronosystem (environmental changes over time). Preschool risk factors spanning these categories, such as negative, inconsistent parenting behaviour, maternal stress, and high levels of family adversity, have been shown to be associated with the emergence and persistence of psychopathology into school age (Campbell, 1995). Predictors of poorer language skills in childhood can also be found across the ecological model, including male gender, ethnic minority status, previous low language ability, emotional development, and low parental education, Zubrick, Taylor & Christensen,2015; Wallace et al., 2015).

The current study moves towards exploring the impact of language and behavioural difficulties reported by parents in the preschool period on later developmental outcomes; in particular, we explore whether children with parent-reported language or behavioural difficulties at age 4 years are more likely than peers without such concerns reported to struggle with life circumstances at age 6 years and what impact risk factors have on the relationship between early parental concerns and later outcomes. Taking inspiration from Ecological Systems theory, we include child (gender), micro (single parent status, maternal age at child's birth), and macrosystem (household income level, ethnicity) risk factors in our analysis (Carter et al., 2010; Elberling et al., 2010; Jusiene, Breidokiene, & Pakalniskiene, 2015; Proctor, Vosler, & Murty, 1992; Sourander, 2001).

Key messages

- Preschool language or behaviour concerns are associated with language, general development, school life, health, and behavioural concerns in the early school years.
- There is no additive effect of having both language and behaviour concerns on later developmental problems.
- For preschool children with language or behaviour concerns: lone parent families, low income, and male gender are associated with increased risk of poorer outcomes in the early school years.

There is debate over the merits of a community-centric (Dockett & Perry, 2013) versus a child-centric (Pagani & Fitzpatrick, 2014) approach to school readiness; for the purpose of this research, we will focus on the latter. Child-centred indicators of school readiness are centred upon the child exhibiting the academic, social–emotional and behavioural competence to perform and engage successfully in the academic settings characteristic of formal schooling (Claessens, Duncan, & Engel, 2009). It is logical therefore that we employ each of these dimensions in our evaluation of the preschool child's development and capacity to progress through schooling.

2 | METHODS

Data from the GUS national birth cohort study were used (Hall & Elliman, 2006). Language and behavioural difficulties were assessed at age 4 years using parent-reported concerns and the SDQ (Goodman, 2001). Measures of adjustment to life circumstances at age 6 years were collated into four key outcome domains: attitude to school life, language and general development, behaviour, and general health. Both univariate and multivariate logistic regression models were fitted in order to explore independent associations between language and behavioural difficulties at age 4 years and adjustment to life circumstances at age 6 years, whilst controlling for other contributing risk factors.

2.1 | The sample

The cohort was designed to reflect Scottish population demographics and was derived from those families in receipt of a universal child benefit (97% of the Scottish population at the time of sampling). Data remained unweighted for this analysis because the purpose was not to produce a prevalence estimate but to report on relationships between actual data gathered; research has demonstrated that selective attrition has a very limited effect on regression models such as this (Wolke et al., 2009).

Data covering two separate periods from within the Child cohort of the GUS study were used: Data for 2,500 children aged 3–4 years (GUS Sweep 2 2006/7, average age 46 months at Sweep 2 interview, 88% of original Child cohort [n = 2,858]) were combined with follow-up data for children in their first year of school (n = 2,200). Due to differences in dates of birth and consequent eligibility to start school, the first year of school for the sample fell across two sweeps of data collection. The majority of children were in their first year of school during Sweep 4 of data collection, which took place in 2008/9 (average age 70 months at Sweep 4 interview). These data were supplemented for children that started school the previous year with data from Sweep 3 (average age 59 months at interview). Identical data were collected for children in their first year of school at both Sweep 3 and Sweep 4. More detail about the sample can be found in the Sweep 2 User Guide (Bradshaw et al., n.d.).

2.2 | Predictor variables age 4 years

Measures of the child's social, emotional, and behavioural difficulties were collected through the use of the parent-rated SDQ (4- to 16-year-old version; Goodman, 1997). It comprises 25 statements, which the informant marks as "very true," "somewhat true," or "not at all true" of the child. The 25 statements are divided into positive and negative attributes; the four negative scales used in this study include conduct problems, hyperactivity/inattention, peer relationship problems, and emotional symptoms. Combination of the four negative scales yields a total difficulties score, which gives an overall quantitative assessment of the child's mental well-being (Sim et al., 2013). The threshold for the "abnormal" range on the total difficulties score should equate to the 90th centile of the 4- to 17-year-old U.K. population. For the purpose of this analysis, normal/abnormal cut-off scores for all SDQ subscales were derived from the 4- to 17-year-old four-band classification system (Meltzer, Gatward, Goodman, & Ford, 2003): close to average and slightly raised categories are merged to create a "normal" category and high and very high categories are merged to create an "abnormal" category, which corresponds to the most symptomatic 10% of the population.

The child's language difficulties were measured using one "umbrella" variable identified through cross-tabulation to determine overlap between cases from the original four-item questionnaire: concerns about child's language development, child's language developing slowly, hard for child to understand people, and other concerns relating to child's language development. Further details of variables used can be found in Appendix A.

2.3 | Outcome variables age 6 years

Sixty-seven parent-reported, child-centred outcome variables were selected for inclusion in the first stage of data analysis based on previous evidence in the field. These variables were individually cross-tabulated with each of the age 4 years difficulties groups: language difficulties, behavioural difficulties, language and behaviour difficulties, and no difficulties (Appendix B). Based on the results of this analysis, 44 variables ($p < .05$) were selected for inclusion in regression analysis. This number was further reduced to 23 variables ($p < .05$) following results from univariate regression analysis. These 23 variables were then assigned into four domains: school life, language and general development, behaviour, and health (Table 1). Variable assignment domains were supported by a principle components factor analysis (Appendix C).

2.4 | Research questions

1. Are parental concerns raised regarding language difficulties, behavioural difficulties, or both at age 4 years associated with increased odds of a child experiencing difficulties in school life, language and general development, behaviour, and health at age 6 years compared with typically developing peers?
2. Are the odds of poorer outcomes in the areas of school life, language and general development, behaviour ,and health at age 6 years higher for those children with parent-reported concerns about both language and behaviour difficulties at age 4 years, than for children with language or behavioural difficulties alone?

TABLE 1 Variables contained within outcome groups

Behaviour	Language and development	School life	Health
General behaviour	Concerns re child's language development	Child reluctant to go to school	Child's general health
Behaviour towards others	Child pronounces words poorly	Child complains about school	Child has new longstanding illness/ disability
Child has emotional or behavioural difficulties	Hard for people to understand child		SDQ emotional symptoms score
SDQ conduct problems score	Childs language developing slowly		SDQ peer problems score
SDQ total difficulties score category	Child has additional support needs		Child stutters
SDQ hyperactivity score category	Child does not understand people		
Concerns re: child general development	Child does not hear well		

Note. Detail of the formation of these groups is contained in Appendix C.

Abbreviations: SDQ, Strengths and Difficulties Questionnaire.

3. How does the child's sex, maternal age at child's birth, single parent status, ethnicity, and household income level impact upon the relationship between the predictor and outcome variables?

2.5 | Analysis plan

Each of the 23 outcome variables were fitted into individual logistic regression models with the difficulties groups: language difficulties, behavioural difficulties, and an interaction term language*behavioural difficulties as predictors. The following risk factors were also included in each regression model: child sex, maternal age at time of child's birth, single parent status, ethnicity, and equivalised household income (EHI). The process of equivalisation reduces the incomes of larger families and increases the incomes of single people. This equivalised income allows the comparison of living standards between households that vary in size and composition. The adjustment reflects the fact that a family of several people requires a higher income than a single person in order for both households to enjoy a comparable standard of living (Chanfreau and Burchardt, 2008). EHI was selected as the measure of socio-economic status for the purpose of this analysis as research has shown household income to be more predictive of negative life outcomes than more traditional measures of socio-economic status such as education or employment (Duncan, Daly, McDonough, & Williams, 2002). Characteristics of the sample are presented in Table 2.

3 | RESULTS

Two thousand five hundred children were included in the present analysis. At age 4 years, 408 (16.3%) of this sample had parent-reported language difficulties, 597 (24.1%) had behavioural difficulties, and 161 (6.5%) had both language and behaviour difficulties. For each of the language, behaviour and both difficulties groups, boys made up the majority (68.4% language, 59.8% behaviour, and 70.8% language and behaviour).

The proportion of children identified as having difficulties was greatest in the most economically deprived group (language difficulties 26.6% in EHI 1 and 14.2% in EHI 5, behavioural difficulties 28.8% in EHI 1 and 13.3% in EHI 5, language and behaviour difficulties 29.1% in EHI 1 and 9.3% in EHI 5) and decreased incrementally as income level increased (Table 2).

3.1 | Outcomes following preschool parent-reported language difficulties

For those children identified as having language difficulties at age 4 years: the odds, at age 6 years, of having language and developmental difficulties were seven times higher (OR 7.34, 95% CI [5.35, 10.05]), the odds of having health problems were 1.3 times higher (OR 1.31, 95% CI [1.02, 1.67]), and the odds of having behavioural difficulties were 1.6 times higher (OR 1.57, 95% CI [1.21, 2.05]) than their typically developing peers (see Table 3).

3.2 | Outcomes following preschool parental behaviour concerns

For children identified as having behaviour concerns at age 4 years, the odds of having difficulty adjusting to school life were 1.8 times higher (OR 1.75, 95% CI [1.42, 2.14]), the odds of having language and development problems were 2.4 times higher (OR 2.43, 95% CI [1.84, 3.19]), the odds of having health problems were 1.5 times higher (OR 1.53, 95% CI [1.23, 1.89]), and the odds of having behaviour problems at age 6 years were five times higher (OR 4.80, 95% CI [3.79, 6.10]) than their typically developing peers (see Table 3).

3.3 | Outcomes following interaction of preschool parent-reported language and behavioural difficulties

The interaction between language and behavioural difficulties at age 4 years had an odds ratio of 0.5, controlling for language alone and behaviour alone, associated with language and developmental problems at age 6 years (OR .52, 95% CI [0.31, 0.89]), suggesting no additive effect of the two concerns. In addition, male gender was

TABLE 2 Sample characteristics Sweep 2 (age 3–4 years)

		Language difficulties			Behavioural difficulties			Language and behavioural difficulties		
		Yes *N* (%)	No *N* (%)	Total *N* (%)	Yes *N* (%)	No *N* (%)	Total *N* (%)	Yes *N* (%)	No *N* (%)	Total *N* (%)
Child sex	Male	279 (68.4)	1,005 (48.1)	1,284 (51.4)	357 (59.8)	915 (48.7)	1,272 (51.4)	114 (70.8)	1,168 (50.0)	1,282 (51.4)
	Female	129 (31.6)	1,086 (51.9)	1,215 (48.6)	240 (40.2)	964 (51.3)	1,204 (48.6)	47 (29.2)	1,166 (50.0)	1,213 (48.6)
Maternal age at child's birth	<20 years	27 (6.7)	109 (5.3)	136 (5.6)	54 (9.3)	82 (4.5)	136 (5.6)	14 (8.9)	122 (5.4)	136 (5.6)
	20–29 years	161 (40.1)	794 (38.9)	955 (39.1)	267 (45.9)	680 (37.0)	947 (39.1)	80 (51.0)	872 (38.2)	952 (39.1)
	30–39 years	201 (50.1)	1,075 (52.7)	1,276 (52.3)	251 (43.1)	1,014 (55.1)	1,265 (52.3)	61 (38.9)	1,214 (53.2)	1,275 (52.3)
	40+ years	12 (3)	62 (3)	74 (3)	10 (1.7)	63 (3.4)	73 (3)	2 (1.3)	72 (3.2)	74 (3.0)
Single parent status	Yes	106 (26)	396 (18.9)	502 (20.1)	154 (25.8)	341 (18.1)	495 (20)	47 (29.2)	453 (19.4)	500 (20.0)
	No	302 (74)	1,695 (81.1)	1,997 (79.9)	443 (74.2)	1,538 (81.9)	1,981 (80)	114 (70.8)	1,881 (80.6)	1,995 (80.0)
Ethnicity	White	391 (96.1)	2,020 (96.7)	2,411 (96.6)	569 (95.5)	1,825 (97.2)	2,394 (96.8)	154 (95.7)	2,254 (96.7)	2,408 (96.6)
	Other	16 (3.9)	70 (3.3)	86 (3.4)	27 (4.5)	53 (2.8)	80 (3.2)	7 (4.3)	78 (3.3)	85 (3.4)
Equalised income quintiles	1 (<£9644)	101 (26.6)	375 (19.2)	476 (20.4)	160 (28.8)	306 (17.4)	466 (20.1)	44 (29.1)	430 (19.7)	474 (20.4)
	2 (> = £9644 < £16,433)	95 (25)	380 (19.5)	475 (20.4)	126 (22.7)	346 (19.7)	472 (20.4)	46 (30.5)	429 (19.7)	475 (20.4)
	3 (> = £16,433 < £25,000)	67 (17.6)	375 (19.2)	442 (19)	99 (17.8)	342 (19.5)	441 (19.1)	24 (15.9)	418 (19.2)	442 (19.0)
	4 (> = £25,000 < £34,167)	63 (16.6)	412 (21.1)	475 (20.4)	97 (17.4)	375 (21.3)	472 (20.4)	23 (15.2)	452 (20.8)	475 (20.4)
	5 (> = £34,167)	54 (14.2)	409 (21.0)	463 (19.9)	74 (13.3)	389 (22.1)	463 (20)	14 (9.3)	449 (20.6)	463 (19.9)

Note. Percentages are for columns.

TABLE 3 Logistic regression model of screening variables age 4 years and domain outcome variables age 6 years

	Outcome domains at age 6 years							
	School life		Language and development		Health		Behaviour	
Predictor and risk factors	Expβ	95% CI	Expβ	95% CI	Expβ	95% CI	Expβ	95% CI
Language difficulties	NS		7.335**	[5.35, 10.05]	1.307*	[1.02, 1.67]	1.571*	[1.21, 2.05]
Behaviour difficulties	1.746**	[1.42, 2.14]	2.427**	[1.84, 3.19]	1.527**	[1.23, 1.89]	4.804**	[3.79, 6.10]
Language*behaviour	NS		.521*	[.307, .886]	NS		NS	
Child sex	NS		1.514**	[1.21, 1.90]	NS		NS	
Single parent status	1.563**	[1.25, 1.96]	1.330*	[1.01, 1.75]	NS		NS	
Equivalised income								
1 (<£9644)	NS		NS		1.362*	[1.02, 1.82]	2.131**	[1.57, 2.90]
2 (> = £9644 < £16,433)					1.018		1.428*	[1.06, 1.92]
3 (> = £16,433 < £25,000)					1.133		1.163	
4 (> = £25,000 < £34,167)					1.015		1.142	
5 (> = £34,167)					1.000		1.000	

Note. Variables entered into the models: language difficulties, behavioural difficulties, language*behaviour difficulties, child sex, maternal age, single parent status, ethnicity, equivalised income quintile.

*$p < .05$. **$p = .00$

associated with higher odds of language and developmental problems (OR 1.51, 95% CI [1.21, 1.90]) as was a single parent home (OR 1.33, 95% CI [1.01, 1.75]; Table 3).

This becomes clearer when the interaction between language and behavioural difficulties is entered into the regression model on its own without individual terms for language difficulties and behavioural difficulties. In this case, the odds ratio for the interaction term "language and behaviour" (exp(B) 6.25) is roughly the same as the odds ratio for language difficulties alone (exp(B) 6.83). Of those children who had both language and behavioural difficulties at age 4 years, 61.9% had language and developmental difficulties at age 6 years, closely followed by 57.8% of those with language difficulties alone; of those children who had behavioural difficulties at age 4 years, only 36.9% had language and developmental difficulties at age 6 years. Both of these approaches again support the idea that there is no additive effect of having both language and behavioural difficulties on later developmental problems.

The interaction between language and behaviour difficulties at age 4 years was not significantly associated with any other outcome (school life, health, or behaviour alone) at age 6 years in the multivariable models.

Overall, behavioural difficulties at age 4 years are associated with a wider range of negative outcomes at age 6 years than language difficulties. The strongest associations were found between language difficulties identified at age 4 years and continuing language and developmental problems at age 6 years and behavioural difficulties identified at age 4 years and continuing behavioural difficulties at age 6 years. Surprisingly, no additive effect was found for those children whose parents had concerns relating to both their language and behaviour.

4 | DISCUSSION

We sought to find out how children from a population cohort with parent-reported language or behavioural difficulties identified at preschool age were adjusting to life circumstances at a 2-year follow-up and explore the impact of contextual risk factors on these relationships.

Our study found that children with parent-reported behavioural difficulties at age 4 years demonstrated poorer adjustment in more domains at age 6 years than their typically developing peers than those children identified as having language difficulties at age 4 years. Single parent status, male sex, and level of deprivation were all associated with higher odds of poor outcomes. The risk factors associated with poor adjustment to life circumstances identified in this study are consistent with many studies conducted in this field (Elberling et al., 2016; Eun, Lee, & Kim, 2014; Lavigne et al., 1996).

Children with parent-reported behaviour concerns at age 4 years were more likely to have difficulty adjusting to school life, to have language and developmental difficulties, to have health problems, and more likely to have behaviour problems at age 6 years than their typically developing peers. These findings support an emerging literature on conduct and oppositional disorders, which illustrate that early indicators of these disorders persist from preschool age into later childhood and adulthood (Lahey, Loeber, Quay, Frick, & Grimm, 1992; Wilson et al., 2012). Given that much research supports the disparity in behavioural outcomes between boys and girls (Fuchs et al., 2013; Klein, Otto, Fuchs, Reibiger, & von Klitzing, 2015), it was surprising that our research did not identify gender as a mediator between behavioural difficulties at age 4 years and continuing concerns about behaviour at age 6 years. There are, however, more boys (60%) than girls (40%) in the behavioural difficulties group, perhaps this finding

highlights that the gender disparity is not heightened in those who remain in the behavioural difficulties group but in those who achieve entry into this group in the first place.

The strongest association to emerge from this model was that children with parental concerns about language at age 4 years were more likely to have language and developmental difficulties at age 6 years. This is consistent with literature exploring the persistence of preschool language disorders (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000; Gillberg, 2010). They were also more likely to have health problems and to have behaviour problems at age 6 years than their typically developing peers.

The finding that preschool behaviour concerns are associated with negative outcomes in more areas of early school life than language difficulties may not be surprising but is certainly concerning given the current focus of preschool and early school assessments on literacy and academic achievement. This emphasises the need for an expansion of focus in early years surveillance to incorporate both cognitive/academic measurement and standardised behavioural assessment (Sim et al., 2015). School-based interventions such as nurture groups, which focus on supporting learning whilst addressing social and emotional needs have demonstrated improvements in children's well-being (Seth-Smith, Levi, Pratt, Fonagy, & Jaffey, 2010), social, and emotional development based on results from the SDQ and in developing learning skills (Gerrard, 2006).

The present study also identified family income as a risk factor in the relationship between early language and behavioural difficulties and later adverse health and behavioural outcomes. The association between socio-economic status and social, emotional, and behavioural outcomes has been well documented (Barry et al., 2015; Gershoff, Aber, Raver, & Lennon, 2007). The relationship between preschool language difficulties and poor health outcomes is, however, surprising. A possible explanation for this might be that language is a proxy for IQ, which has been shown to predict poorer health outcomes compared with the general population (Der, Batty, & Deary, 2009). Unfortunately, IQ data have not been collected in GUS. Low literacy has also been shown to be linked to adverse health outcomes in an adult population (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). The current research could provide an early example of this relationship, with existing research suggesting that early language skills are the cognitive foundation of later literacy (Duff et al., 2015).

The results suggest that the presence of both (language and behavioural) risk factors at age 4 years does not have an additive effect on a child's language and development at age 6 years. The language and developmental outcomes for those children who had parental concerns about both language and behaviour at age 4 years were comparable with those children who had only language difficulties. Children who had behavioural difficulties at age 4 years were less likely to exhibit concerns about language and development at age 6 years than their peers with either language difficulties alone or with both language and behavioural difficulties. It could be that behavioural screening at age 4 years picks up on issues relating to maturity, which could conceivably cause difficulty in the areas of school life, behavioural outcomes, and even health outcomes at age 6 years, whereas screening for language at this age highlights more fundamental problems of learning and cognition.

4.1 | Strengths

The use of a large population cohort study allows us the opportunity to study a sample representative of the general population. The breadth of data collected for the GUS cohort provide an opportunity to view and measure the child across multiple domains of his/her life, whereas follow up data enable us to explore developmental trajectories within these domains.

4.2 | Limitations

Limitations of the current study include the sole use of parent-reported outcome data, which is subject to bias (Achenbach, McConaughy, & Howell, 1987), and therefore the results are less conclusive than clinical or third party (i.e., teacher-reported) outcomes. Inclusion of triangulated outcome data at age 6 years would enrich these results. Previous research has suggested that agreement between parent-reported and independently measured language development was higher for children with poorer language (Bennetts, et al., 2016). Given the relative affluence and education levels of the GUS sample, one may anticipate a larger proportion of children in the average language range.

Selective attrition also poses a problem in cohort studies, particularly in relation to those families containing children with more behaviour problems, but previous work has indicated this has a relatively small impact on the relationships between risk factors and outcomes (Wolke et al., 2009). Furthermore, although the use of population level data is a strength, the limited amount of data from children with more severe language deficits mean that the additive effects of difficulties for this group could not be tested separately; further research within a clinical sample may address this.

Finally, this study did not take account of intervention, which may have occurred between the two timepoints: Children with both language and behavioural difficulties reported at age 3–4 years are likely to include those with neurodevelopmental disorders, which may have resulted in these children accessing greater support in the intervening period, influencing the surprisingly low risk of combined language and behavioural outcomes on later development.

5 | CONCLUSIONS

There are increasingly strong arguments for early identification of neurodevelopmental difficulties, and this paper demonstrates how quickly isolated difficulties in the preschool years can impact upon multiple domains of a child's life, leading to poor social, educational, health, and behavioural outcomes in the early school years. Given the persistence of parental concerns into later years and the manifestation of these as parent-reported difficulties in various aspects of development and adaptation at age 6 years, the credibility of parental concerns regarding child development within a primary care setting should be raised. In addition, it is likely that streamlined referral pathways for preschoolers could limit negative outcomes for the child, their family, and society.

Further research is required to examine the causal pathways between preschool risk factors and developmental progression

throughout childhood and to explore additive impacts of early language and behavioural difficulties within a clinical sample.

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CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

F. S. designed the research questions; conducted the statistical analysis with advice from P. W., L. T., and L. M.; and wrote all drafts of the manuscript. All authors read and approved the final manuscript.

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APPENDIX A

Expanded methodology

1. Identify predictor variables age 4 years (GUS Child Cohort 1 Sweep 2);
   a. Language difficulties 408/2,499 (16.3%)
      Seven parent-report variables included in GUS dataset measuring language in response to the question: Do you have any concerns about child's speech and language?
      MbDspe04 No—does not have any concerns.
      MbDspe05 His language is developing slowly.
      MbDspe06 It is hard for other people to understand him.
      MbDspe07 He does not seem to understand other people.
      MbDspe08 He pronounces words poorly.
      MbDspe09 He does not hear well.
      MbDspe10 He stutters.
      - Three excluded (MbDspe06, 08, and 10) as representing difficulties in articulation and pronunciation.
      - One excluded (MbDspe09) as representing hearing difficulties.
      - Three remaining variables (MbDspe04, 05, and 07) were cross-tabulated to explore overlap which identified one key "umbrella" variable, namely, "MbDspe04 parent reported concerns about child's language development"
      - A negative answer to "MbDspe04 parent reported concerns about child's language development" was therefore used to determine parent-reported language difficulties.

   b. Behavioural difficulties 597/2,476 (24.1%)
      Parent-report Strengths and Difficulties Questionnaire used to measure behaviour:
      - SDQ emotional symptoms,
      - SDQ conduct problems,
      - SDQ hyperactivity score,
      - SDQ peer problems,
      - SDQ total difficulties score.
        This study used abnormal scores on any SDQ subscale to describe parent-reported behavioural difficulties. Normal/abnormal cut-off scores for SDQ were derived from the 4- to 17-year-old four-band classification system (Meltzer, H., Gatward, R., Goodman, R., and Ford, F. (2000) *Mental health of children and adolescents in Great Britain*. London: The Stationery Office):
      - Normal = Close to average and slightly raised
      - Abnormal = High and very high (top 10%)

   c. Language and behavioural difficulties 161/2,495 (6.5%)
      - Those children with concerns raised in both language measure and SDQ

   d. No difficulties (control group)
      Following consultation with a statistician, the language and behavioural difficulties group and the control group were not entered into the final model but were replaced with an interaction term of language difficulties and behavioural difficulties.

2. Identifying risk factors (GUS Child Cohort 1 Sweep 2);
   a. The following five risk factors were included in analysis based on research previously conducted in the field (Carter et al., 2010; Duncan et al., 2002; Elberling et al., 2010; Jusiene et al., 2015; Proctor et al., 1992; Sourander, 2001) child sex, maternal age at time of child's birth, single parent status, ethnicity, and equivalised household income.

3. Identifying outcome variables age 6 years;
   a. Sixty-seven parent-reported outcome variables were selected for inclusion in the first stage of data analysis based on their being directly related to the child and/or within the child's control.

   b. These variables were individually cross-tabulated with each of the age 4 years predictor variables: language difficulties, behavioural difficulties, language and behavioural difficulties, no difficulties.
      - Forty-four variables achieved Chi-squared significance ($p < .05$) and were entered into univariate regression models.
      - Twenty-three variables achieving significance ($p < .05$) in regression analysis were then allocated into four domains (school life, language and general development, behaviour, and health) based on best fit for subject of variable

   c. A principal components factor analysis was used to explore the assignment of outcome variables to domains. Results supported reduction of factors into four components, which accounted for 40.5% of the variance (Appendix 3).

4. Final regression model

a. Each of the four domains of outcome variables (school life, language and general development, behaviour, and health) were fitted into individual logistic regression models with the respective difficulties groups: language difficulties, behavioural difficulties and an interaction term language*behaviour as predictors, and child sex, maternal age at time of child's birth, single parent status, ethnicity, and equivalised household income as risk factors.

APPENDIX B

CROSS-TABULATION ANALYSIS OF PREDICTOR AND ORIGINAL OUTCOME VARIABLES

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
Prim_School_Child_complain	218 (62.1)	425 (59.4)	155 (61.0)						
No complain									
Complain	133 (37.9)	291 (40.6)	99 (39.0)						
CHI	.019	.000	.001	.584	.106	.230	.485	.210	.892
Prim_School_Child_Reluctant	231 (66.0)	457 (63.9)	166 (65.6)						
No									
Yes	119 (34.0)	258 (36.1)	87 (34.4)						
CHI	.017	.000	.001	.635	.009	.144	.574	.031	.457
How_Easy_Child_Homework	298 (90.6)	610 (89.6)	213 (89.9)						
Medium/easy									
Difficult	31 (9.4)	71 (10.4)	24 (10.1)						
CHI	.015	.000	.000	.000	.540	.000	.539	.059	.313
How_Often_Child_Complete_Homework	321 (97.6)	669 (98.1)	229 (96.6)						
Always/usually									
Sometimes/never	8 (2.4)	13 (1.9)	8 (3.4)						
CHI	.004	.004	.000	.001	.469	.063	.465	.005	.042
Concern child language development	197 (57.8)	547 (78.6)	133 (53.6)						
No									
Yes	144 (42.2)	149 (21.4)	115 (46.4)						
CHI	.000	.000	.000	.000	.415	.807	.446	.025	.354
Slow language development	282 (82.7)	640 (92.0)	200 (80.6)						
No									
Yes	59 (17.3)	56 (8.0)	48 (19.4)						
CHI	.000	.000	.000	.000	.082	.762	.061	.259	.007
Hard to understand child	294 (86.2)	647 (93.0)	208 (83.9)						
No									
Yes	47 (13.8)	49 (7.0)	40 (16.1)						
CHI	.000	.000	.000	.002	.336	.939	.447	.013	.699
Child does not understand others	328 (96.2)	681 (97.8)	236 (95.2)						
No									
Yes	13 (3.8)	15 (2.2)	12 (4.8)						

(Continued)

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
CHI	.000	.000	.000	.259	.873	.545	.490	.748	.565
Poor pronunciation	257 (75.4)	608 (87.4)	182 (73.4)						
No									
Yes	84 (24.6)	88 (12.6)	66 (26.6)						
CHI	.000	.000	.000	.000	.430	.214	.892	.363	.291
Child does not hear well	328 (96.2)	678 (97.4)	236 (95.2)						
No									
Yes	13 (3.8)	18 (2.6)	12 (4.8)						
CHI	.000	.000	.000	.760	.315	.934	.384	.568	.414
Stutters	330 (96.8)	682 (98.0)	238 (96.0)						
No									
Yes	11 (3.2)	14 (2.0)	10 (4.0)						
CHI	.000	.000	.000	.006	.003	.015	.529	.008	.033
Concerns child general development	256 (75.1)	544 (78.2)	177 (71.4)						
No									
Yes	85 (24.9)	152 (21.8)	71 (28.6)						
CHI	.000	.000	.000	.000	.273	.001	.243	.148	.020
Has child additional support needs	257 (76.7)	573 (83.2)	175 (72.0)						
No									
Yes	78 (23.3)	116 (16.8)	68 (28.0)						
CHI	.000	.000	.000	.001	.038	.029	.377	.003	.000
Learning disability	56 (71.8)	89 (76.7)	47 (69.1)						
No									
Yes	22 (28.2)	27 (23.3)	21 (30.9)						
CHI	.001	.007	.001	.964	.265	.986	.208	.505	.475
Dyslexia	77 (98.7)	113 (97.4)	67 (98.5)						
No									
Yes	1 (1.3)	3 (2.6)	1 (1.5)						
CHI	.082	.118	.045	.713	.631	.732	.171	.576	.344
Sight problems	73 (93.6)	110 (94.8)	63 (92.6)						
No									
Yes	5 (6.4)	6 (5.2)	5 (7.4)						
CHI	.731	.129	.222	.306	.368	.879	.454	.281	.954
Hearing problems	70 (89.7)	108 (93.1)	61 (89.7)						
No									
Yes	8 (10.3)	8 (6.9)	7 (10.3)						
CHI	.028	.455	.128	.802	.974	.073	.497	.874	.757
Deafblind	78 (100)	116 (100)	68 (100)						
No									
Yes	0 (0)	0 (0)	0 (0)						
CHI	-	-	-	-	-	-	-	-	-
Physical disability	71 (91.0)	108 (93.1)	61 (89.7)						

(Continued)

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
No									
Yes	7 (9.0)	8 (6.9)	7 (10.3)						
CHI	.123	.455	.320	.353	.933	.600	.497	.321	.757
Speech problem	20 (25.6)	56 (48.3)	18 (26.5)						
No									
Yes	58 (74.4)	60 (51.7)	50 (73.5)						
CHI	.000	.050	.000	.918	.795	.061	.033	.289	.493
ASD	70 (89.7)	106 (91.4)	61 (89.7)						
No									
Yes	8 (10.3)	10 (8.6)	7 (10.3)						
CHI	.145	.279	.128	.142	.517	.879	.454	.480	.736
Social/behavioural difficulties	61 (78.2)	87 (75.0)	53 (77.9)						
No									
Yes	17 (21.8)	29 (25.0)	15 (22.1)						
CHI	.812	.297	.530	.491	.961	.165	.144	.740	.374
Physical health problem	70 (89.7)	104 (89.7)	62 (91.2)						
No									
Yes	8 (10.3)	12 (10.3)	6 (8.8)						
CHI	.688	.526	.571	.116	.751	.359	.800	.425	.911
Mental Health problem	77 (98.7)	115 (99.1)	67 (98.5)						
No									
Yes	1 (1.3)	1 (0.9)	1 (1.5)						
CHI	.281	.506	.435	.449	.684	.581	.834	.487	.934
Interrupted schooling	78 (100)	116 (100)	68 (100)						
No									
Yes	0 (0)	0 (0)	0 (0)						
CHI	.350	.130	.196	.449	.684	.581	.834	.391	.246
English as a second language	76 (97.4)	114 (98.3)	66 (97.1)						
No									
Yes	2 (2.6)	2 (1.7)	2 (2.9)						
CHI	.126	.345	.268	.685	.391	.367	.001	.674	.756
Looked after or accommodated child	78 (100)	116 (100)	68 (100)						
No									
Yes	0 (0)	0 (0)	0 (0)						
CHI	-	-	-	-	-	-	-	-	-
More able	77 (98.7)	115 (99.1)	67 (98.5)						
No									
Yes	1 (1.3)	1 (0.9)	1 (1.5)						
CHI	.919	.548	.715	.685	.968	.434	.767	.465	.756
Other (ASN)	71 (91.0)	96 (82.2)	61 (89.7)						
No									
Yes	7 (9.0)	20 (17.2)	7 (10.3)						

(Continued)

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
CHI	.005	.949	.096	.428	.740	.621	.208	.664	.479
Discipline: Time out	85 (24.9)	169 (24.3)	62 (25.0)						
Not Used									
Used	256 (75.1)	527 (75.7)	186 (75.0)						
CHI	.138	.006	.093	.069	.448	.032	.016	.002	.000
Discipline: Reward/stickers	96 (28.2)	187 (26.9)	69 (27.8)						
Not Used									
Used	245 (71.8)	509 (73.1)	179 (72.2)						
CHI	.636	.096	.409	.432	.591	.002	.268	.000	.000
Discipline: Ignore bad behaviour	126 (37.0)	233 (33.5)	87 (35.1)						
Not Used									
Used	215 (63.0)	463 (66.5)	161 (64.9)						
CHI	.908	.014	.274	.854	.701	.220	.215	.199	.006
Discipline: Smack	175 (51.3)	339 (48.7)	130 (52.4)						
Not Used									
Used	166 (48.7)	357 (51.3)	118 (47.6)						
CHI	.243	.000	.141	.006	.995	.452	.144	.030	.874
Discipline: Naughty step	103 (30.2)	190 (27.3)	74 (29.8)						
Not Used									
Used	238 (69.8)	506 (72.7)	174 (70.2)						
CHI	.629	.007	.302	.186	.065	.077	.211	.001	.000
Discipline: Raise voice/shout	42 (12.3)	91 (13.1)	34 (13.7)						
Not Used									
Used	299 (87.7)	605 (86.9)	214 (86.3)						
CHI	.237	.216	.467	.981	.001	.000	.000	.000	.000
Discipline: Remove treats	53 (15.5)	89 (12.8)	37 (14.9)						
Not Used									
Used	288 (84.5)	607 (87.2)	211 (85.1)						
CHI	.228	.566	.532	.098	.965	.002	.022	.013	.000
Discipline: Grounding	226 (66.3)	411 (59.1)	155 (62.5)						
Not Used									
Used	115 (33.7)	285 (40.9)	93 (37.5)						
CHI	.917	.000	.056	.025	.001	.000	.003	.000	.000
Discipline: None of above	339 (99.4)	693 (99.6)	247 (99.6)						
Not Used									
Used	2 (0.6)	3 (0.4)	1 (0.4)						
CHI	.833	.706	.811	.709	.751	.470	.239	.860	.372
Feeding Problem in last 3 months	224 (65.7)	449 (64.5)	163 (65.7)						
No									
Yes	117 (34.3)	247 (35.5)	85 (34.3)						
CHI	.148	.002	.067	.700	.454	.879	.563	.062	.401
Problem behaviour to others	255 (74.8)	510 (73.3)	174 (70.2)						

(Continued)

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
No									
Yes	86 (25.2)	186 (26.7)	74 (29.8)						
CHI	.000	.000	.000	.000	.000	.000	.195	.000	.000
Problem behaviour generally	224 (65.7)	416 (59.8)	150 (60.5)						
No									
Yes	117 (34.3)	280 (40.2)	98 (39.5)						
CHI	.000	.000	.000	.100	.000	.001	.802	.001	.005
Sibling relation problem last 3 months	160 (56.1)	286 (51.0)	108 (51.7)						
No									
Yes	125 (43.9)	275 (49.0)	101(48.3)						
CHI	.005	.000	.000	.059	.000	.000	.292	.000	.018
SDQ emotional symptoms category	312 (91.5)	620 (89.1)	226 (91.1)						
Normal									
Abnormal	26 (7.6)	71 (10.2)	20 (8.1)						
CHI	.146	.000	.001						
SDQ total diffs category	298 (87.4)	597 (85.8)	210 (84.7)						
Normal									
Abnormal	35 (10.3)	88 (12.6)	33 (13.3)						
CHI	.000	.000	.000						
SDQ conduct problems category	273 (80.1)	515 (74.0)	187 (75.4)						
Normal									
Abnormal	64 (18.8)	176 (25.3)	58 (23.4)						
CHI	.000	.000	.000						
SDQ hyperactivity category	291 (85.3)	597 (85.8)	206 (83.1)						
Normal									
Abnormal	46 (13.5)	91 (13.1)	39 (15.7)						
CHI	.000	.000	.000						
SDQ peer problems category	294 (86.2)	598 (85.9)	210 (84.7)						
Normal									
Abnormal	40 (11.7)	91 (13.1)	34 (13.7)						
CHI	.000	.000	.000						
Emotional behavioural difficulties	192 (56.8)	371 (53.6)	125 (50.8)						
Normal									
Abnormal	146 (43.2)	321 (46.4)	121 (49.2)						
CHI	.000	.000	.000	.000	.016	.001	.000	.005	.000
Length_Time_Diffs (>1 year)	55 (37.7)	136 (42.4)	48 (39.7)						
$\leq$ 1 yr									
> 1 yr	91 (62.3)	185 (57.6)	73 (60.3)						
CHI	.013	.025	.008	.000	.000	.001	.006	.008	.000
Diffs_Upset_Distress_Child	50 (34.2)	97 (30.2)	43 (35.5)						
No									
Yes	96 (65.8)	224 (69.8)	78 (64.5)						

(Continued)

Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
CHI	.653	.116	.720	.000	.001	.001	.029	.055	.000
Diffs_Interfere_Childs_Life	51 (34.9)	122 (38.0)	38 (31.4)						
No									
Yes	95 (65.1)	199 (62.0)	83 (68.6)						
CHI	.025	.005	.001	.000	.008	.000	.036	.020	.000
Diffs_Interfere_Child_Friend	57 (39.0)	130 (40.5)	45 (37.2)						
No									
Yes	89 (61.0)	191 (59.5)	76 (62.8)						
CHI	.035	.001	.001	.000	.016	.001	.023	.039	.000
Diffs_Interfere_Class_Learning	37 (25.5)	113 (35.4)	29 (24.2)						
No									
Yes	108 (74.5)	206 (64.6)	91 (75.8)						
CHI	.000	.022	.000	.000	.010	.001	.024	.041	.000
Diffs_Interfere_Leisure	65 (44.5)	169 (52.6)	50 (41.3)						
No									
Yes	81 (55.5)	152 (47.4)	71 (58.7)						
CHI	.000	.000	.000	.000	.020	.000	.037	.067	.000
Diffs_Burden_Family	61 (41.8)	142 (44.2)	49 (40.5)						
No									
Yes	85 (58.2)	179 (55.8)	72 (59.5)						
CHI	.020	.001	.001	.000	.001	.000	.034	.031	.000
No. days books/Stories in last week									
CHI	.152	.000	.002	.000	.000	.000	.004	.000	.000
No. days play outdoors in last week									
CHI	.995	.220	.402	.484	.068	.062	.026	.000	.001
No. days painting/drawing in last week									
CHI	.026	.011	.005	.000	.143	.037	.134	.019	.026
No. days nursery rhymes/songs in last week									
CHI	.023	.021	.014	.000	.005	.311	.007	.007	.001
No. days computer etc. in last week									
CHI	.787	.771	.738	.000	.871	.382	.832	.086	.053
No. days watched TV >10 min last week									
CHI	.223	.522	.360	.202	.102	.248	.722	.002	.666
Creative_Activity_Days_Per_Week									
Normal									
Abnormal									
CHI	.089	.018	.007						
Screen_Time_more10mins_Days_Per_Week									
Normal									
Abnormal									
CHI	.548	.381	.695						

(Continued)

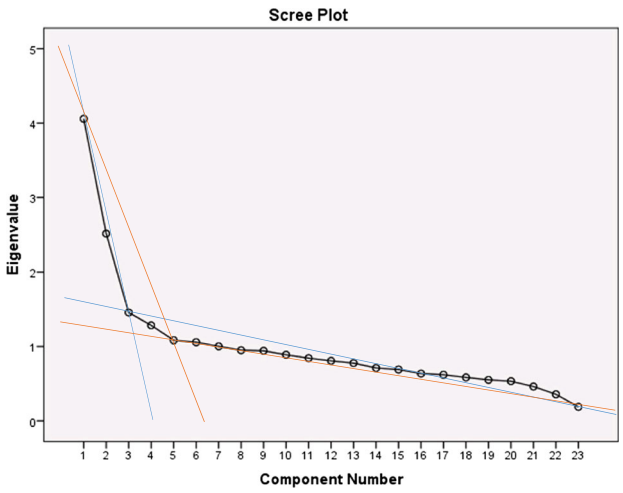
Variable	Lang probs Abn. N (%)	Dev/behav probs Abn. N (%)	Lang and DBP Abn. N (%)	Sex of child	Mother age at child's birth	Resp. living with partner	Ethnic. of resp.	SIMD 2006 quintile	NS-SEC house income
Child_General_Health	337 (98.8)	686 (98.6)	244 (98.4)						
Good									
Bad	4 (1.2)	10 (1.4)	4 (1.6)						
CHI	.140	.001	.002	.449	.000	.198	.325	.162	.000
Same longstanding illness	51 (78.5)	88 (82.2)	44 (81.5)						
Yes									
No	14 (21.5)	19 (17.8)	10 (18.5)						
CHI	.899	.306	.543	.606	.963	.801	.458	.887	.773
New longstanding illness	53 (15.5)	104 (14.9)	43 (17.3)						
Yes									
No	288 (84.5)	592 (85.1)	205 (82.7)						
CHI	.005	.000	.000	.029	.005	.081	.056	.016	.016
Accident req. health service									
No									
Yes									
CHI	.128	.222	.052	.135	.697	.001	.272	.488	.012
BMI out with ISD healthy range	233 (74.4)	467 (72.7)	165 (72.7)						
Normal									
Abnormal	80 (25.6)	175 (27.3)	62 (27.3)						
CHI	.955	.290	.522	.171	.050	.002	.961	.082	.144
Overweight/obese	235 (75.1)	479 (74.6)	166 (73.1)						
Normal									
Abnormal	78 (24.9)	163 (25.4)	61 (26.9)						
CHI	.691	.351	.306	.072	.131	.005	.498	.077	.172

APPENDIX C

PRINCIPAL COMPONENTS FACTOR ANALYSIS

Presented is a summary of key results from the factor analysis to explore assignment of outcome variables to outcome domains. A principal component analysis was conducted with oblimin rotations (based on assumption of overlap between components), a fixed number of factors extracted (n = 4), and coefficient suppression below the value of 0.3.

1. Scree plot of outcome variables.



NB. Lines of inflexion indicate alternative cut-points for number of components

NB. Lines of inflexion indicate alternative cut-points for number of components

2. Pattern matrix of outcome variable component groupings.

Pattern matrix[a]				
	Component			
	1	2	3	4
	Corresponding outcome domain			
	Behaviour	Language and development	School life	Health
General behaviour	.711[b]			
Behaviour towards others	.677[b]			
Child has emotional or behavioural difficulties	.638[b]			
SDQ conduct problems score	.635[b]			
SDQ total difficulties score category	.548[b]			.492
SDQ hyperactivity score category	.498[b]			
Concerns re: child general development	.498			
Difficult to get child to complete homework				
Feeding problem (past 3 months)				
Concerns re child's language development		.887[b]		
Child pronounces words poorly		−.786[b]		
Hard for people to understand child		−.728[b]		
Childs language developing slowly		−.704[b]		
Child has additional support needs		−.472[b]		
Child does not understand people		−.442[b]		
Child does not hear well		−.386[b]		
Child reluctant to go to school			.862[b]	
Child complains about school			.843[b]	
Child's general health				.585[b]
Child has new longstanding illness/disability				.525[b]
SDQ emotional symptoms score				.477
SDQ peer problems score				.404
Child stutters				.312

Note. Extraction method: Principal component analysis. Rotation method: Oblimin with Kaiser normalisation.[a]

[a]Rotation converged in seven iterations.

[b]Variables grouped together within original outcome domains.